

ON THE ORTHOPTERA FOUND ON THE FLORIDA KEYS AND IN EXTREME SOUTHERN FLORIDA. I.

BY JAMES A. G. REHN AND MORGAN HEBARD.

It has been the desire of the authors for some time to determine what species of Orthoptera were to be found throughout the winter in the subtropical area of southern Florida. With this end in view, the junior author visited the region in the latter part of March, 1910, as it seemed evident that this would be the time when species would have entirely disappeared, should they succumb to the colder weather in this region, while spring forms would, as a rule, not have reached maturity. The facts obtained would indicate that a considerable proportion of the species of this region are in evidence throughout the winter, though probably in considerably reduced numbers. The amount of this reduction cannot be stated at present, as insufficient work has been done in this region during the summer. The families Mantidæ and Tettigoniidæ, however, alone seem to be severely affected by the cold, and the few specimens taken which belonged to these families were either most battered remnants of the past summer or the first freshly emerged individuals of the spring brood. Nymphs of a number of interesting species were far more abundant than adults of the same, while nymphs of several species plainly unknown to the United States were taken, unfortunately in such an early stage of development as to make determination impossible. It is the intention of the authors to do considerable work in southern Florida during the summer of the present year, and not only is it hoped that adults of these very interesting species may be secured, but also that the publication of the results, when compared with those given in the present paper, will indicate the difference between the abundance of forms in the summer and winter throughout the region.

The following table will indicate the comparative abundance of forms as found just before the appearance of the spring forms.

Family.	Number of species.	Very abundant.	Abundant.	Small numbers.	Rare.	Very rare.	Nymphs only.
Forficulidæ.....	5	1	3	1	—	—	—
Blattidæ.....	9	—	1	2	1	3	2
Mantidæ.....	2	—	—	—	—	—	2
Phasmidæ.....	3	—	1	—	—	1	1
Acrididæ.....	23	1	11	6	1	1	3
Tettigoniidæ.....	5	—	—	1	1	3	—
Gryllidæ.....	18	2	4	5	1	5	1

The number of specimens taken on the trip of March, 1910, is thirteen hundred and fifteen, and includes sixty-one species. The authors have also examined and here recorded material from this region which was collected for the Brooklyn Museum of Arts and Sciences during the latter part of November, 1911. All of the material in the United States National Museum from southern Florida has been placed at the disposal of the authors through the kindness of Mr. A. N. Caudell, and the specimens which had not been previously considered are recorded in the present paper. Miscellaneous material in the Hebard Collection and the Academy of Natural Sciences of Philadelphia from this region, and the collections made by the junior author in January and February, 1903 and 1904, in southern Florida, have also been examined and treated in the present paper, when such action has been thought advisable. All of the material considered in the present paper is in the Hebard Collection and that of the Academy of Natural Sciences of Philadelphia, with the exception of these specimens which have B. I. (Brooklyn Institute of Arts and Sciences), or U. S. N. M. (United States National Museum) in brackets after the records. We wish to extend our thanks to Mr. W. S. Blatchley for the loan of the types of his *Eritettix sylvestrus*, which enabled us to solve definitely the problem involved. The total number of specimens treated in the present paper is fourteen hundred and eighty-six, which includes sixty-three species; of these one new species and two new geographic races are described, while one circumtropical species is recorded from the United States for the first time.

\*

## FORFICULIDÆ.

*Anisolabis annulipes* (H. Lucas).

Long Key, Fla., March 17, 1910; 1 ♀.

Key West, Fla., March 15, 16, 1910; 5 ♂, 12 ♀.

In the series before us we find the femoral annuli lacking in two specimens and weakly indicated in a number of others. The specimens from Key West were taken from under boards in a vacant field, from under coquina boulders on coquina sand on the beach and also under coquina boulders on fine sand a little back from the beach. Along the beach this form was much the less plentiful of the two species of the genus there found.

*Anisolabis maritima* (Gené).

Long Key, Fla., March 13, 17, 1910; 4 ♂, 11 ♀.

Key West, Fla., March 15, 16, 1910; 24 ♂, 24 ♀: November 21, 1911 (Englehardt); 1 ♀ [B. I.].

The specimens from Long Key were all found on the wet ground under heads of prostrate cocconut palms which had been saturated with salt water and were thoroughly decayed. These specimens when captured possessed an exceedingly disagreeable odor suggestive of decomposition. One specimen at Key West was taken from under boards in a vacant field where most of the specimens of *Anisolabis annulipes* were found, but the others of the series were all taken from under coquina boulders scattered along the beach just above the usual high-water mark. It is among these boulders about half way up the beach that the beach plant, *Borrchia fontescens*, grows abundantly. In this situation *Anisolabis maritima* was exceedingly plentiful, and when disturbed individuals of a colony were seen to run about with abdomen curved upward and forceps wide open, ready to administer a vigorous pinch.

**Labidura bidens** (Olivier).

Key West, Fla., March 15, 16, 1910; 13 ♂, 9 ♀, 1 ♀ n: November 21, 1911 (Englehardt); 1 ♂ [B. I.].

We use Olivier's name in conformity with our previous papers, although we are by no means convinced of the specific distinction of Floridian and West Indian specimens from true *Labidura riparia*. Burr<sup>1</sup> has tentatively allowed *bidens* to have a place in his "forms" of the *riparia* group. This species was found in the same beach environment as the last, usually in twos and threes, and individuals were exceedingly repulsive owing to the fact that they emitted an odor suggesting carrion, but even more nauseating. This odor seemed not to originate from an ejected secretion, but from the oily surface of the body. The great forceps of this species are exceedingly weak compared with those of *Anisolabis maritima*, although individuals made themselves appear very formidable when molested.

**Labia curvicauda** (Motsch).

Long Key, Fla., March 13, 17, 1910; 50 ♂, 78 ♀, 4 n.

This species, which has never before been recorded from the United States, was found in numbers in the dying tops of cocconut palms at the white base of the fronds where these were moist. None were ever found at the dry bases of the dead fronds, but when these were torn off, the living, hard, white base of each underlying frond, already dead and dry except at that point, would usually expose several specimens. Sometimes several adults would be exposed, sometimes a small colony of very young insects, and once a female

---

<sup>1</sup> *Genera Insectorum, Derm.*, p. 37.

guarding a tiny heap of eggs which she immediately started to remove, carrying two or three eggs at a time to a spot an inch away. These earwigs were often found near nests of a small stocky red ant, which species did not seem to interfere with them at all. It was possible to obtain so large a series owing to the fact that the hurricane of the previous summer had blown down quantities of cocoanut palms; these prostrate or half-prostrate trees were examined and about half were found to contain specimens of this earwig. In the large series before us we find the length of the females to be from 4 to 5 mm., and that of the males from 4 to 5.5 mm.; a few other specimens would exceed this maximum, but are found to be squeezed to an unnatural length. The great majority of adults in the series are very near 4.5 mm. in length. Among the specimens taken are two females which had but recently reached maturity and are colored uniformly pale, wood-brown. This species is found around the world in tropical latitudes; it was described from the Nura Ellia Mountains of Ceylon.

***Prolabia unidentata* (Beauv.).<sup>2</sup>**

*Labia burgessi* Sc.

*Labia guttata* Sc.

Miami, Fla., March 27, 28, 1910; 7 ♂, 7 ♀, 2 ♀ n.

Homestead, Fla., March 17-19, 1910; 3 ♂, 6 ♀, 1 ♀ n.

One male specimen from Miami has the usual median tooth on the internal margin of the forceps lacking, while the other individuals of that sex show this tooth varying from a very blunt to a strongly marked protuberance. We have followed Burr in using this specific name for the wingless form generally called *burgessi* Scudder. All of the present series lack wings. The specimens were all taken from under the bark of dead pine logs in the pine woods.

**BLATTIDÆ.**

***Ischnoptera deropeltiformis* (Brunner).**

Homestead, Fla., March 17-19, 1910; 2 ♂, 1 ♀, 1 ♂ n, 2 ♀ n.

Both of the adult males have the tegmina 15 mm. in length, this being slightly smaller than the measurements previously given by the authors as the minimum for the species. The adult female, on the other hand, is slightly above the average size. In all the specimens the femora and tibiæ are similarly colored. This species, previously recorded as far south as Miami, Fla., was found under

---

<sup>2</sup> Burr, *Proc. U. S. N. M.*, Vol. XXXVIII, pp. 451, 452, 1911.

rubbish about a small cultivated "pot-hole" in the pine woods, excepting the adult female, which was taken from under a board far out on the everglades. This species is distinctly geophilous and appears to prefer damp surroundings.

*Neoblattella*<sup>3</sup> *adpersicollis* (Stål).

Homestead, Fla., March 18, 1910; 1 ♂.

The only previous record of this species in the United States is the authors' report of its occurrence at Miami, Fla.<sup>4</sup> The specimen taken at Homestead was captured two miles westward in the pine forest. All of the specimens secured at Miami were taken in the town, and it was therefore a question whether the species was not recently introduced. The capture of the present specimen, well out in the untouched forest, would indicate that the species is indigenous to this region. There are four specimens of this species in the National Museum from Dade County, Florida.

*Ceratinoptera diaphana* (Fabr.).

Long Key, Fla., March 13, 1910; 2 n.

This striking species, easily recognized in the immature condition, has been recorded from Key West by the authors.<sup>5</sup> These are the only records of the species occurring within the United States. The specimens at present under consideration were taken from under the loose dry fibres near the head of a standing cocoanut palm. The specimen from Key West, an adult female, was taken from under a coquina boulder in heavy scrub.

*Ceratinoptera lutea* S. and Z.

Miami, Fla., March 20, 28, 1910; 1 ♂, 4 n.

Homestead, Fla., March 17-19, 1910; 1 ♂.

Key Largo, Fla., March 18, 1910; 1 ♀.

Long Key, Fla., March 13, 17, 1910; 4 ♂, 3 ♀, 4 n.

Key West, Fla., March 15, 16, 1910; 1 ♂, 4 ♀, 1 n.

All the adult specimens from the above localities have the tegmina failing to reach the apex of the abdomen by a considerable interval. Specimens from Georgia and North Carolina agree more fully with the original description in having the tegmina as long as the abdomen. The series from Long Key was captured by looking under dead petioles of the cocoanut palm lying on moist ground along the edges of pools of brackish water, while the specimens from Key West were

<sup>3</sup> Vide Shelford, *Entom. Monthly Mag.*, (2) Vol. XXII, p. 155.

<sup>4</sup> These *Proceedings*, 1905, p. 32.

<sup>5</sup> *Entomological News*, Vol. XXI, p. 103, 1910.

taken in dead dry grasses under boards in a vacant field on the edge of the city.

*Phaetalia laevigata* (Beauv.).

Key Largo, Fla., March, 1898, 1 ♀.<sup>6</sup>

This specimen, taken by C. L. Pollard, is in the U. S. N. M. Collection.

*Eurycotis floridana* (Walker).

Miami, Fla., March 28, 1910; 1 ♂: November 15, 1911 (Engelhardt); 1 ♂ [B. I.].

Homestead, Fla., March 17-19, 1910; 4 n.

Long Key, Fla., March 13, 17, 1910; 9 n.

Key West, Fla., March 15, 16, 1910; 3 ♂, 7 ♀, 11 n.

Of the above adult specimens but one, a female, possesses decided light lateral borders on the pronotum, tegmina, and metanotum;<sup>7</sup> five others, however, representing both sexes, have more or less distinct indications of the same. These bars are not at all indicated in three of the five most immature individuals, but are very decided in the nymphs in the several stages immediately preceding maturity. The youngest specimens vary from uniform very dark seal-brown to the same color passing into maroon on the median portion of the thoracic segments, one of the latter coloration having fairly distinct lateral bars on a portion of the pronotum. One of the youngest Long Key nymphs is much paler than any of the others, being dark ferruginous with weakly indicated lateral bars. The antennæ of these quite juvenile individuals are ochraceous, slightly darker in some than in others. Apparently with the assumption of the pale lateral bars the head becomes paler, ferruginous in fact, and the antennæ are darkened. As growth progresses the head becomes burnt sienna, more or less clouded with seal-brown as found in the adult.

The specimens taken from the Florida mainland were all found in the pine woods under the dry bark of dead pine logs. On Long Key the series was taken from the dry fibres at the base of the heads of cocoanut palms; two adults seen escaped.

At Key West a large colony was discovered among boards lying on dry grass in a field, and several were captured upon turning over coquina boulders in the dense bush. When trying excitedly to

<sup>6</sup> See *Ent. News*, Vol. XXI, p. 103, 1910.

<sup>7</sup> For the synonymy of *Platyzosteria sabalianus* Scudder, *Platyzosteria ingens* Scudder, and *Periplaneta semipicta* Walker, see Rehn, *Trans. Am. Ent. Soc.*, Vol. XXIX, p. 277, 1903.

escape these insects emit from their anal extremities spurts of a white, acrid fluid which has a very pungent, stifling odor. They are called "Spanish roaches" by the natives of this region.<sup>8</sup>

There are three females and one nymph from Cape Sable, Fla., and one male from Sugar Loaf Key, Fla., taken in March, 1898, by O. F. Cook, in the National Museum.

*Pycnoscelus surinamensis* (Linn.).

Haulover, Fla., March; 1 adult [U. S. N. M.].

Miami, Fla., March 20, 1910; 3 ♂, 4 n: November 16, 1911 (Englehardt); 1 ♀ [B. I.].

Long Key, Fla., March 13, 17, 1910; 5 n.

Key West, Fla., March 15, 16, 1910; 1 ♀, 7 n.

This species is common under planks, stones, and other debris on the ground throughout this region. Two specimens were also found at Long Key in the dry fibres at the base of the petioles of a coconut palm.

*Blaberus atropos* (Stoll).

Key West, Fla.; 1 ♂.<sup>9</sup>

This specimen is in the collection of the Academy of Natural Sciences. The collection of the National Museum also contains a male specimen of this species taken at Key West, Fla., December 28, 1909, by Harris.

*Plectoptera poeyi* (Sauss.).

Key West, Fla., March 15, 1910; 1 ♀, 1 n.

The eight specimens collected at this locality on January 19, 1904,<sup>10</sup> were taken with ease in a short space of time by beating *Ilex cassine*, but on this last visit, though triple the number of these bushes were beaten vigorously, but one adult specimen of this roach was taken. Key West is the only definite locality in the United States from which this Cuban species has been recorded.

*Chorisonaura plocea* Rehn.

Key Largo, Fla., March 18, 1910; 1 ♀, 1 ♂ n.

The adult specimen measures as follows:

<sup>8</sup> For further notes on this species from Southern Florida see the present authors (these *Proceedings*, 1905, p. 32).

<sup>9</sup> The specimen was unintentionally recorded by the senior author in the *Entomological News*, Vol. XIX, p. 441, 1908, and by the authors erroneously as *Blaberus cubensis* Saussure in the *Entomological News*, Vol. XXI, p. 103, 1910.

<sup>10</sup> These *Proceedings*, 1905, p. 33.

Length of body.....	8.2 mm.
Length of pronotum.....	2. " "
Greatest width of pronotum.....	3. " "
Length of tegmen.....	7.5 " "
Greatest width of tegmen.....	2.9 " "

When compared with the Marietta, Ga., female recorded by the authors,<sup>11</sup> the Key Largo individuals are paler, more oclraceous, with the brown pronotal maculations reduced to a minimum, in this respect similar to the type.

The almost impenetrable jungle on Key Largo was examined, and in its depths the two specimens of this species were secured by beating the lower branches of gumbo limbo, other trees and the lower bushes and shrubs, among which latter are to be found such semi-tropical forms as *Ocotea catesbyana* and *Citharexylum villosum*.

#### MANTIDÆ.

##### *Stagmomantis carolina* (Johansson).

Long Key, Fla., March 13, 1910; 1 n.

Key West, Fla., March 15, 16, 1910; 1 n.

\* The specimen from Key West was beaten from the shrub *Ilex cassine*.

##### *Gonatista grisea* (Fabr.).

Dade City, Fla., September 14, 1907 (W. D. Furnley); 1 ♀ [U. S. N. M.].

Key West, Fla., March 15, 16, 1910; 4 n.: April 1 (Schwarz); 1 ♂ [U. S. N. M.].

Capron, Fla., April; 1 ♀ n. [U. S. N. M.].

These individuals from Key West are in a similar condition to those previously recorded by the authors from the same island. Two stages of development are represented in the four specimens. The specimens were taken in the same situation where they were previously found,<sup>12</sup> on the trunks of gumbo limbo trees.

The collection of the Academy contains an adult male from Tarpon Springs, Fla., taken November, 1909, by P. Cheyney, and an adult female from Texas without further data.

#### PHASMIDÆ.

##### *Manomera tenuescens* (Sc.).

Miami, Fla., March 28, 1910; 1 ♀, 11 n.

This series was taken by beating the clumps of wire grass and low

<sup>11</sup> These *Proceedings*, 1911, p. 586.

<sup>12</sup> These *Proceedings*, 1905, p. 33.



bushes growing on the very edge of the everglades. Five stages of development are represented among the eleven immature individuals. The adult female had just reached the mature stage and when captured was still in a soft condition. Considerable search failed to reveal more adults, and the indications are that in this region the last of March is the very earliest time for adults to appear.

***Aplopus mayeri* Caudell.**

Key Largo, Fla., March 18, 1910; 1 n.

The specimen was beaten from a dense tangle of wild grape vines and other shrubbery growing in the heart of the jungle on Key Largo. So dense was the overhead vegetation in this situation that a condition of twilight existed throughout the day. While the specimen is quite immature, being but seventeen millimeters in length, it possesses sufficient in the way of characters to enable us to determine the species when compared with an adult paratype pair from the type locality, Loggerhead Key, Florida. This record brings the range of this species close to the mainland of Florida, the only known locality other than the two mentioned above being Key West (Caudell).

***Anisomorpha buprestoides* (Stoll).**

Miami, Fla., March 27, 28, 1910; 4 n.

Homestead, Fla., March 17-19, 1910; 1 ♀, 1 nearly adult and 2 quite immature specimens.

Long Key, Fla., March 13, 17, 1910; 5 n.

Key West, Fla., March 15, 16, 1910; 7 ♂, 3 ♀, 2 nearly adult and 2 quite immature specimens.

The youngest specimens in this series show that the longitudinal blackish lines of the adult are rarely present as pronounced continuous markings in the earlier stages of immaturity, in a few cases they are completely but weakly indicated and in most of the specimens are represented by more or less discontinued lineations on the head and thoracic segments. When the individuals are more than half the size of the adults, the lateral blackish lines are weakly indicated and the median one is proportionately narrower than in the adults and on the head, thorax, and portion of the abdomen divided by a hair-line of ochraceous. The adult specimens of both sexes are strongly patterned with black, the width of the median bar varying appreciably. The coloration of the adults is vandyke brown shading into russet, while that of the nymphs in the last stages of immaturity is wood-brown shading into bistre. It would be easy to mistake the nymphs in the last stage

of immaturity for specimens of a smaller, lighter, and more uniformly colored species of the genus.

The series here recorded was taken in a great variety of situations. Many were on the underside of coquina boulders, some between boards piled in a field and some under the bark of a dead pine log.

#### ACRIDIDÆ.

##### *Apotettix rugosus* (Sc.).

Miami, Fla., March 28, 1910; 6 ♂.

Homestead, Fla., March 17-19, 1910; 5 ♂, 2 ♀.

Key West, Fla., March 15, 1910; 1 ♂.

Considerable variation in the shape of the tegmina exists in this series, some individuals having the form distinctly oval, others have the ventro-distal margin more or less distinctly oblique-arcuate. These tettigids were taken at Miami and Homestead in small moist spots in the pine woods covered with very low swamp vegetation; at the latter place they were also taken in a marshy arm of the everglades. The specimen taken at Key West was beaten from *Ilex cassine* in a "powder-dry" field.

##### *Neotettix variabilis* Hancock.

Miami, Fla., March 28, 1910; 1 ♀.

Cocoanut Grove, Fla., 1887; 1 ♀ (TYPE) [U. S. N. M.].

This species is very close to *N. femoratus* (Sc.), agreeing in general form, character of dorsum of abdomen, and shape of the frontal costa; differing only in the smaller size, distinctly smaller tegmina, and regular dorsal carina of the caudal femora. More material may show this to be a geographic race of *N. femoratus*. The specimen from Miami was taken in a low spot in the pine woods near the south bank of the Miami River.

The type differs from the specimen from Miami in being more scabrous on the dorsum of the pronotum, much like specimens of *N. coarctatus*, but fully agreeing in the essentials, *i.e.*, the form of the facial forks and the short, apically rounded tegmina. The regularity of the dorsal carina of the caudal femora is not as marked in the type as in our specimen.

##### *Neotettix coarctatus* Hancock.

*Apotettix minutus* Rehn and Hebard, Proc. A. N. S. Phila., 1905, p. 34.

Miami, Fla., March 27, 28, 1910; 33 ♂, 33 ♀, 15 n: November 16, 1911 (Englehardt); 1 ♂, 1 ♀ [B. I.].

Cocoanut Grove, Fla., 1888; 1 ♀ (TYPE) [U. S. N. M.].

Dade County, Fla. (Hubbard and Schwarz); 1 ♀<sup>13</sup> (TYPE)  
[U. S. N. M.].

Homestead, Fla., March 17-19, 1910; 19 ♂, 23 ♀, 4 n.

Key West, Fla., March 15, 1910; 1 ♀ n.

Punta Gorda, Fla., November 12-14, 1911 (Davis); 2 ♂, 1 n.  
[U. S. N. M.].

Our specimens of this species agree perfectly with the types. This form is very close to *N. bolteri* Hancock, being probably a southern geographic race of the same, differing in the somewhat less robust form with the median carina of the pronotum less regularly arcuate and subdepressed between the humeral angles. The species occurs in one form with the pronotum elongate and another with the apex of the same not surpassing the tips of the caudal femora. The former of these is represented by ten males and five females from Homestead and four males and two females from Miami. In general appearance this form seems at first glance to be quite distinct from the form having the short pronotum, but careful comparison shows them to be identical. The present authors' *Apotettix minutus* is based on the elongate form, and in consequence their name falls into the synonymy, although it would have to be retained to distinguish this phase should a separate name be used to indicate it. The median carina of the pronotum is decidedly variable in strength in both of these forms. The general size varies considerably in both sexes and the coloration in a large number is quite uniform in tone without the usual paired blackish velvety spots. There is some variation in the rugosity of the pronotum, a few specimens having the rugæ very weak, but the subscutellate frontal costa readily separates these specimens from the *femoratus-variabilis* series.

This was the common species of tettigid on the wet ground, sparsely overgrown with the knee-high marsh grass, found on the arms of the everglades and in "pot-holes" in the pine woods.

***Tettigidea spicata*** Morse.

Miami, Fla., March 28, 1910; 1 ♂ n.

This species, described from Georgia and Florida, has previously been definitely recorded from but one locality, San Pablo, in the latter State.

The specimen before us is probably in the next to last nymphal stage, and is referred without hesitation to this species. This nymph was taken in the low moist spots in the pine woods among very low swamp vegetation on the south bank of the Miami River.

<sup>13</sup> This specimen is the one recorded as "New Mexico" by Hancock. The accession number shows it to have been taken in Dade County, Florida.

**Tettigidea lateralis** (Say).

Miami, Fla., March 28, 1910; 4 n.

Homestead, Fla., March 17-19, 1910; 2 ♂, 3 ♀, 4 n.

Specimens of this genus were found in the same locations as the series of the two preceding genera but always in much smaller numbers. The nymphs all show the front margin of the pronotum distinctly angulate while the series of adults all have this margin broadly arcuate. This would suggest that the ancestral form from which this species is derived had the cephalic margin of the pronotum produced over the head in a distinct angle.

**Radinotatum brevipenne peninsulare** subsp. nov.

This insect differs from *Radinotatum brevipenne* in the longer head with much more produced rostrum and more concave face, longer antennæ, pronotum with shallower lateral lobes, more linear and usually shorter tegmina, longer and more slender caudal femora and more delicate, shorter, genicular angles. The subgenital plate in the male is also usually longer and more slender.

Type; ♂: Homestead, Dade County, Florida, about wire-grass in undergrowth of pine woods, March 17-19, 1910. (Hebard.) [Hebard Collection.]

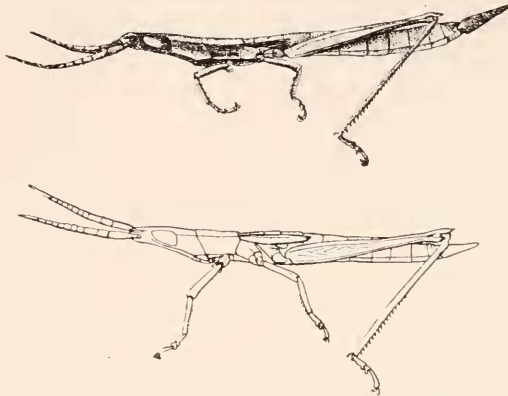
Size large for the genus. Body exceedingly slender and much compressed. Head nearly twice as long as pronotum, strongly produced, rostrate, face concave; fastigium in front of the eyes as long as the eyes, nearly twice as long as broad, the lateral margins parallel and strongly rotundato-rectangulate on the cephalic margin; antennæ long, triquetrous, rather broadly ensiform; eyes extremely elongate-ovate. Pronotum elongate, the dorsum subequal in width; lateral lobes vertical and subequal, cephalic margin very oblique, slightly concave, the ventro-cephalic angle sharp and obtuse, caudal margin broadly obtuse-angulate emarginate with the ventro-caudal angle sharp and acute. Tegmina as long as pronotum, decidedly elongate-lanceolate, narrowing proximad, apex very narrowly rounded, separated by a space nearly twice as great as the tegminal width. Subgenital plate very long and lanceolate, one and one-quarter times the length of the pronotum. Caudal femora exceedingly slender, nearly as long as the abdomen exclusive of the subgenital plate, with genicular angles produced, the inner considerably more so than the outer.

Allotypic ♀. Data the same as the type.

Considerably larger than the male, body less slender, antennæ proportionately more broadly ensiform, tegmina separated by a

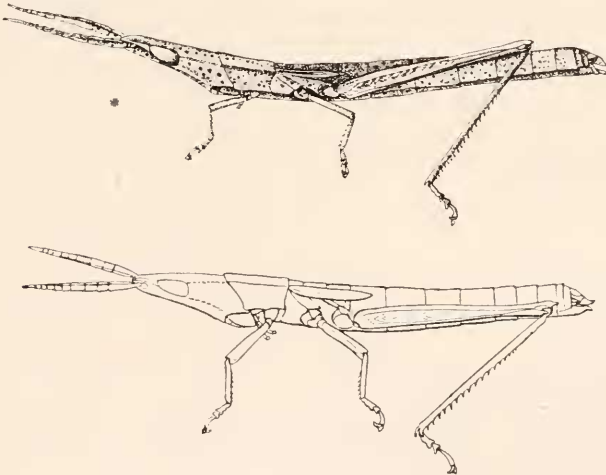
space somewhat more than twice the tegminal width, caudal femora much shorter than abdomen.

General color prout's brown, the lateral paired postocular lines very pale, the dorsal of these extending to the tips of the tegmina, the



Figs. 1 and 2.—Lateral views of males of *Radinotatum brevipenne peninsulae* (1, Type) and *R. brevipenne* (2; Thomasville, Ga.). ( $\times 1\frac{1}{2}$ .)

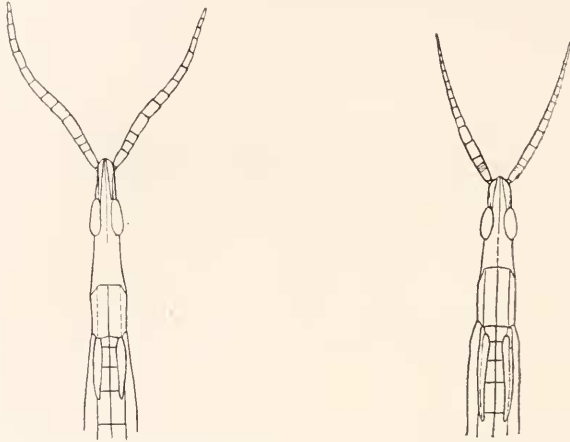
ventral extending to the ventro-caudal angle of the lateral lobes of the pronotum. These lines are particularly distinct in the male, and in the same sex there is also a medio-longitudinal bar of hair-brown on the dorsal surface of the head increasing in width ventrad. The



Figs. 3 and 4.—Lateral view of females of *Radinotatum brevipenne peninsulae* (3, Allotype) and *R. brevipenne* (4; Thomasville, Ga.). ( $\times 1\frac{1}{2}$ .)

female is irregularly speckled about the head with clove-brown, but under the microscope this appears to be due to a diseased condition.

The type and allotypic female have been measured and the results are given below (in millimeters), together with the measurements of a male and female of *Radinotatum brevipenne* from Thomasville, Ga.: the latter specimens appear to be typical of that species over the greater part of its range.

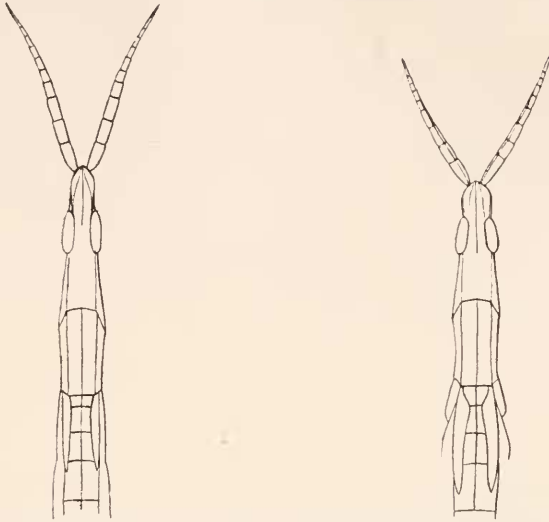


Figs. 5 and 6.—Dorsal outline of head and pronotum of males of *Radinotatum brevipenne peninsulare* (5, Type) and *R. brevipenne* (6; Thomasville, Ga.). ( $\times 2$ )

	<i>R. brevipenne peninsulare</i> .		<i>R. brevipenne</i> .	
	Type ♂.	Allotypic ♀.	Figured ♂.	Figured ♀.
Length of body.....	35.	44.	30.	40.
Facial length of head (to clypeal suture).....	8.	10.	6.	8.
Length of fastigium (from eyes).....	2.2	2.5	2.	2.2
Width of fastigium (in front of eyes).....	1.2	1.7	1.5	2.
Length of antenna.....	13.5	14.	10.5	6. <sup>14</sup> (11)
Length of pronotum.....	4.	5.5	4.	5.5
Width of pronotum.....	2.2	1.5	2.2	1.5
Depth of lateral lobe of pronotum.....	1.5	2.2	1.7	2.5
Length of tegmen.....	4.	6.	6.	7.
Greatest width of tegmen.....	.7	1.	1.2	1.5
Length of caudal femur.....	15.	18.	13.7	17.
Greatest width of caudal femur.....	1.2	1.5	1.7	2.
Length of subgenital plate.....	5.	.....	3.	.....

<sup>14</sup> Antennæ aborted, the length of the antennæ in other females from the same locality is given in parentheses.

In addition to the type and allotype, we have before us the following series which may be considered paratype:



Figs. 7 and 8.—Dorsal outline of head and pronotum of females of *Radinotatum brevipenne peninsulare* (7, Allotype) and *R. brevipenne* (8; Thomasville, Ga.). ( $\times 2$ .)



Figs. 9 and 10.—Dorsal view of distal extremity of caudal femur of females of *Radinotatum brevipenne peninsulare* (9, Allotype) and *R. brevipenne* (10; Thomasville, Ga.). (Greatly enlarged.)

Homestead, Fla., March 17-19, 1910; 35 ♂, 18 ♀, 1 ♀ n.

Miami, Fla., Jan. 27, 1899; 1 ♀: Jan. 29, 31 and Feb. 3, 1903; 2 ♂, 1 ♀: Feb. 6, 9, 1904; 9 ♂, 1 ♀, 1 ♀ n.: July 28, 1904; 1 ♀: March 20-28, 1910; 11 ♂, 6 ♀, 1 ♂ n., 1 ♀ n.: Nov. 16, 1911 (Engelhardt); 2 ♂, 1 ♀, 1 n. [B. I.]: March 2 ♀ n. [U. S. N. M.].

Besides the paratypes we have before us a series of specimens from the following localities which belong to this species:

Fort Reed, Fla., April 28, 1876 (Comstock); 1 ♀ [Hebard Collection].

Gotha, Fla., October, 1901; 1 ♂, 2 ♀ [A. N. S. P.].

Tampa, Fla., January 17, 1904 (Hebard); 2 ♂, 1 ♀.

Chokoloskee, Fla.; 1 ♀ [Hebard Collection].

Capron, Fla.; 1 ♂ [U. S. N. M.].

In the large series from Homestead and Miami little variation is

to be found; both brown and green phases are represented, the former much more numerous, as has been observed in *Radinotatum brevipenne*. There is a suggestion of an approach toward *Radinotatum brevipenne* in one of the females from Gotha.

In the series of *Radinotatum brevipenne* before us we find an adult female from Daytona and a nymphal female from Archer, Fla., showing a strong approach to the southern form in several characters; in fact, these specimens are nearly intermediate between the two. A series from Gainesville and Ormond, Fla., show a tendency toward the southern form in a few characters. Examination of the types in the National Museum shows that *Radinotatum brevipenne* was described from individuals which have some of these characteristics, since these specimens were taken at Palatka, Fla., a locality but little north of the region where the two races intergrade.

The species here described was first recorded by Scudder<sup>15</sup> as *Achurum brevipenne* from Fort Reed, Fla. A large number of adults with a few nymphs were taken in this locality by Comstock between April 5 and May 1, 1876. Comstock<sup>16</sup> himself, speaking of these specimens, says that he has found the species north to the coast of Maryland. This latter record is highly improbable, as nymphs of the genus *Mermiria* were doubtless mistaken for the species. We feel able to make this assertion owing to the fact that considerable field work along the Atlantic coast has shown us that the range of *Radinotatum brevipenne* is limited to points far south of Maryland.

The present authors<sup>17</sup> have recorded this form as *Radinotatum brevipenne* on two previous occasions from Miami and Tampa, Fla., while Caudell<sup>18</sup> has similarly recorded it from Arcadia and Miami.

It is evident that this form has not been recognized previously owing to the fact that so little material of this genus has been available.

The range of *R. brevipenne peninsulare* covers the mainland of southern Florida and extends northward to the vicinity of the twenty-ninth degree of north latitude.

The species was common in the undergrowth of the pine woods.

*Mermiria* sp.

Miami, Fla., March 27, 28, 1910; 4 n.

Long Key, Fla., March 13, 1910; 1 n.

These specimens are quite immature.

<sup>15</sup> *Proc. Bost. Soc. Nat. Hist.*, XIX, p. 88, 1877.

<sup>16</sup> *Introd. Ent.*, p. 101, 1888.

<sup>17</sup> *Trans. Am. Ent. Soc.*, Vol. XXVII, p. 331, 1902, and these *Proceedings*, p. 35, 1905.

<sup>18</sup> *Ent. News*, Vol. XVI, p. 217, 1905.



**Macneillia obscura** (Sc.).

*Eritettix sylvestrus* Blatchley, *A Nature Wooing*, pp. 192, 219, 1902.

Miami, Fla., March 28, 1910; 2 ♂, 4 n.

Homestead, Fla., March 19, 1910; 1 ♀.

There is great variation in this species, both in general coloration and in the intensity of the color pattern. In one of the males from Miami the general color is vandyke brown gradually changing dorsad to seal-brown on all but the upper edge of the wings, the dorsal median section of the pronotum between the supplementary carinae and the corresponding portion of the head; these latter portions of the insect are clay color, naturally making a striking contrast. The other adult male from the same locality is nearly uniform prout's brown in color. This diversity of coloration is found throughout the series from other localities which we have studied.

We have received for examination one male and two females of this species from Ormond, Fla., taken April 10, 1899, by W. S. Blatchley. A male and female were correctly recorded as this species in *A Nature Wooing*, but the other female, which is highly colored and has the vertex slightly more produced, was described as *Eritettix sylvestrus* in that work. The species was described from two females, but the other type specimen has been destroyed. In the absence of a large series such an error is easily understood. We have before us females which agree perfectly with Blatchley's type, and in the frequent specimens which have the lateral carinae strikingly whitish, the general superficial resemblance to *Eritettix* is very apparent. The more unicolorous specimens often have the lateral carinae of the pronotum very faint and sometimes absent. The variability of this character in *Eritettix* has been noted by the present authors, and it is likely that such will be found to be true in still other species of the Truxalinae.<sup>19</sup>

As is almost always found to be the case with this species, the six specimens from Miami were all found in an area not more than a rod in diameter. All of the specimens here recorded were taken in the undergrowth of the pine woods. The species may be considered scarce.

**Amblytropidia occidentalis** (Sauss.).

Miami, Fla., March 28, 1910; 5 ♂, 5 ♀.

Homestead, Fla., March 17-19, 1910; 1 ♂, 2 ♀.

Long Key, Fla., March 13, 1910; 3 ♂, 4 ♀.

<sup>19</sup> These *Proceedings*, 1910, p. 626.

Key Vaca, Fla., March 14, 1910; 7 ♂, 1 ♀.

Boot Key, Fla., March 14, 1910; 2 ♀.

We have before us all the available material of this species from southern Florida and find that specimens from Cape Florida on Key Biscayne, Long Key, Key Vaca and Boot Key, as a rule have the body slightly more compressed, the face more retreating, and the caudal femora slightly more slender. These differences from mainland individuals are, however, very slight, not absolutely constant and sometimes but one of the three may be appreciable, while a few mainland specimens possess the usual insular characters.

In size the Miami and Homestead individuals are but slightly larger than Thomasville, Ga., specimens. The Boot Key and Key Vaca representatives are much the same size as those from Miami and Homestead, although several males are distinctly larger than Thomasville individuals of the same sex. The Long Key specimens exceed in size any individuals of the species seen by us, the females particularly being very large. A series of five males and six females from Cape Florida on Key Biscayne, average larger than any series except that from Long Key. Measurements (in millimeters) of average individuals from the localities mentioned above are as follows:

MALES.

	Thomas- ville.	Miami.	Home- stead.	Cape Florida.	Long Key.	Key Vaca.	Boot Key.
Length of body.....	18.8	20.2	21.9	22.8	24.2	23.	22.
Length of pronotum.....	4.	4.2	4.5	4.6	5.	4.6	4.3
Length of tegmen.....	16.8	16.2	18.	19.	19.3	18.	18.
Length of caudal femur	13.	13.5	14.5	15.5	16.2	15.	15.

FEMALES.

	Thomas- ville.	Miami.	Home- stead.	Cape Florida.	Long Key.	Key Vaca.
Length of body.....	24.5	29.	29.5	31.	31.8	29.5
Length of pronotum.....	5.1	5.5	5.9	5.8	7.	6.
Length of tegmen.....	20.5	21.	20.8	23.2	25.	22.2
Length of caudal femur.....	16.5	18.5	17.5	20.2	21.8	19.2

The usual polychromatism of the species is exemplified in the present series. The Long Key females are all of the strongly bicolored type with the dorsal aspect uniform ochraceous and the lateral and ventral faces nearly uniform seal-brown. The males from the same locality are similarly but much less decidedly colored, the same also being true in the case of the Key Vaca individuals.

The specimens taken on the Florida mainland were all captured in the undergrowth of pine woods. Pines do not grow on any of the Keys which were examined, and the specimens of this species were there found in the luxuriant tangles on the edge of the scrub and in a sort of wire-grass.

*Orphulella pelidna* (Burm.).

Miami, Fla., March 20, 27, 28, 1910; 5 ♂, 4 ♀, 2 n.: November 16, 1911 (Englehardt); 1 ♀ [B. I.].

Homestead, Fla., March 17-19, 1910; 1 ♀.

Long Key, Fla., March 13, 1910; 2 ♂, 3 ♀.

Key Vaca, Fla., March 14, 1910; 3 ♂, 3 ♀, 1 n.

Boot Key, Fla., March 14, 1910; 3 ♂, 3 ♀, 1 n.

Key West, Fla., March 15, 16, 1910; 2 ♂, 5 ♀: November 21, 1911 (Englehardt); 2 ♀ [B. I.].

These specimens are similar in character to New Jersey individuals of the species, exhibiting considerable diversity in size and relative tegminal length, even in specimens from the same locality. Practically all of the color phases found in the species are represented in the south Florida series.

At Miami and Homestead this species was found in wet depressions in the pine woods, while on Long Key and Key Vaca it was taken among the salt-marsh grasses growing scantily on the otherwise bare coquina rock of the low wet portions of these Keys. At Boot Key the specimens were taken among scant tufts of wire-grass growing on the coquina, and were noticed to resemble very closely in color the surface of the rock. The species was found quite plentiful at Key West among the peculiar halophytic plants which grow on the bare coquina.

*Arphia granulata* Sauss.

Miami, Fla., March 27, 28, 1910; 9 ♂, 2 ♀, 2 n.

Homestead, Fla., March 17-19, 1910; 4 ♂.

Key West, Fla., March 15, 16, 1910; 12 ♂, 6 ♀.

Several males and females from Key West vary from burnt umber to chestnut in general coloration and are very little mottled, the rest of the specimens of the series here recorded have as a basic color clove-brown, usually variously mottled with a lighter color. In these latter specimens the two dark bands on the caudal femora are generally quite pronounced, while in the more reddish individuals these bands are either very faint or wholly lacking.

This species was found in open spots in the pine woods at Miami and Homestead, at the former place not infrequently. At Key

West the species was quite plentiful in the open spots in the scrub, where on the previous visit it was only occasionally found.

*Chortophaga australior* R. and H.

Palm Beach, Fla., November 12, 1911 (Englehardt); 1 ♂ [B. I.].

Lemon City, Fla.; (E. J. Brown); 2 ♂. [U. S. N. M.]

Miami, Fla., March 27, 28, 1910; 8 ♂, 4 ♀, 3 n: March (Dyar and Caudell); 1 ♀ [U. S. N. M.].

Homestead, Fla., March 17, 18, 1910; 2 ♀.

Key Vaca, Fla., March 14, 1910; 4 ♂, 2 ♀.

Key West, Fla., March 15, 16, 1910; 18 ♂, 11 ♀: November 21, 1911 (Englehardt); 2 ♂, 4 ♀ [B. I.]: March (Dyar and Caudell); 7 ♂ [U. S. N. M.]: April 13, 1903 (Schwarz); 1 ♀ [U. S. N. M.].

In the present series there are but seven specimens in the green color phase, all of which are females and, with the exception of one individual from Miami, were taken at Key West. One of the female specimens from Key Vaca and one from Key West show a decided approach to this color form, but in these specimens the face and dorsal surface of head and pronotum are suffused with ferruginous, while the bases and tips of the caudal femora are washed with madder-red, which color is more faintly indicated on the contiguous portions of the tegmina. In a large number of the darker specimens before us, the light cruciform marking on the pronotum is very noticeable.

This decidedly campestrian species was abundant wherever found. The insects fly up with alacrity when disturbed, making a whirring, clicking sound in their flight. Although this species is always found in large colonies, the insects are sufficiently wary and rapid in flight to cause the capture of a series to be quite a task.

*Scirtetica marmorata picta* (Se.).

Capron, Fla., April 24; 1 ♀ [U. S. N. M.].

Palm Beach, Fla., November 12, 1911 (Englehardt); 1 ♂ [B. I.].

Miami, Fla., March 27, 28, 1910; 13 ♂, 3 ♀, 1 n: November 16, 1911 (Englehardt); 1 ♀ [B. I.].

After examining about one hundred specimens of *Scirtetica marmorata* from Massachusetts, Connecticut and New Jersey and eighty-one specimens which are referable to *picta*, we have reached the conclusion that Morse's suggestion<sup>20</sup> that the two forms are but geographic races of the same species is strongly supported by our material. Unfortunately, we lack specimens from eastern Virginia and northeastern North Carolina, but we now have a sufficient

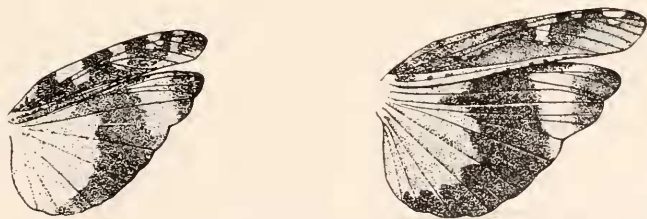
<sup>20</sup> Publ. 18, Carnegie Inst., p. 37, 1904.

series from southwestern North Carolina to prove to us that inter-graduation does exist.

The characters of typical individuals of the two races can best be shown in tabular form:

<i>S. marmorata.</i>	<i>S. marmorata picta.</i>
Wing narrower, its greatest width contained one and three-fourths to one and seven-eighths times in the length.	Wing broader, its greatest width contained one and one-half to one and three-fourths times in the length.
Disk of wing sulphur-yellow.	Disk of wing varying from deep chrome to cadmium-yellow.
Wing band relatively narrow, always narrower than the width of the colored disk, never continued around to the internal margin of the wing.	Wing band relatively broad, rarely narrower than, usually as broad as the width of the colored disk, continued around to, or nearly to, the internal margin of the wing.
Disk of pronotum frequently with pale decussate markings.	Disk of pronotum never with pale decussate markings, uniform in color.

In addition to these features certain others are evident in a number of specimens, but not so consistently as to be considered diagnostic. These are the usually more distinct median carina of the pronotum of *marmorata*, the very frequent breaking up in *picta* of the three



Figs. 11 and 12.—Tegmen and wing of male of *Scirtetica marmorata* (11, Clementon, N. J.) and of same sex of *S. marmorata picta* (12, Miami, Fla.). ( $\times 1\frac{1}{2}$ .)

usually present and well-defined dark tegminal cross bars of *marmorata*<sup>21</sup> and the usually more robust build of *marmorata*. The pronotum of *marmorata* is more constricted cephalo-mesad than is

<sup>21</sup> In the unicolorous individuals which occur in both races these maculations are almost absent.

that of *picta*, but as this can hardly be appreciated without actual comparison of specimens, we have not given it in the above table.

Specimens from Winter Park, New Hanover County, North Carolina, have the proportions of the wings intermediate between the extremes of *marmorata* and *picta*, while the bands of the wings are no wider than in *marmorata* and of similar form, although the color of the disk is closer to *picta* in several specimens and exactly intermediate in others. Several of these specimens also have traces of the decussate pronotal markings of *marmorata*, while the character of the median carina of the pronotum and of the pronotal constriction is closer to *picta*. From these notes it can easily be seen that the characters of the two forms are blended in the individuals from southeastern North Carolina. In consequence of this we have used a trinomial for this form.

The specimens from Miami were taken in the pine woods.

***Psinidia fenestralis* (Serv.).**

Palm Beach, Fla., November 12, 1910 (Englehardt); 1 ♂, 1 ♀ [B. I.].

Miami, Fla., March 28, 1910; 5 ♂, 4 ♀, 1 n.

The coloration of the disk of the wings in this series ranges from orange-buff to orange. The species was found fairly abundant in sandy spots in the pine woods.

***Romalea microptera* (Beauv.).**

Miami, Fla., March 28, 1910; 1 n.

Homestead, Fla., March 17, 18, 1910; 4 n.

Four of these specimens are in the same nymphal stage and would all approximate a length of 12 mm. if not shrunken. The remaining specimen, from Homestead, is apparently in the following nymphal stage and is 19 mm. in length.

The coloration of nymphs of this species is constant, all are black marked with yellowish-red, as is fairly well shown by Glover<sup>22</sup> in his illustration of the nymph of this species. These markings, contrary to that illustration, border only the caudal margin of the pronotum, and in the specimens in the more immature stage before us are orange-vermilion. The specimen in the nymphal stage following has these markings colored saturn red. We have noticed that the newly emerged nymphs of this species have these markings nearly vermilion, while in the nymphs approaching maturity the same markings are usually cadmium-yellow.

<sup>22</sup> *Ill. N. A. Ent., Orth.*, pl. 3, fig. 4, 1872.

All of these specimens were taken in the grasses of the everglades. At this time of year colonies of these, each usually numbering several dozen, may be found in such places, all close to the spot from which they have emerged from the ground.

*Leptysmia marginicollis* (Serv.).

Miami, Fla., March 28, 1910; 1 ♂, 3 ♀.

Homestead, Fla., March 17-19, 1910; 3 ♂, 3 ♀, 1 n.

One female specimen from each of these localities has the general coloration oil green instead of the prout's brown coloration usually found in this species; the dorsal surface, however, in each of these specimens is cinnamon. The lateral pale bars are strongly indicated in all but one of the adults here recorded. The series before us would indicate that in this species there is some increase in size southward, but we find that this is not constant. The length of the females which we have examined from southern Florida varies from 32.5 mm. to 38.5 mm.

At Homestead the specimens were all taken among grasses in the everglades, while those from Miami were captured among a few cat-tails growing in a wet spot.

*Schistocerca americana* Sc.

Miami, Fla., March 20, 27, 1910; 3 ♂, 1 ♀.

Key Largo, Fla., March 18, 1910; 1 ♂.

Long Key, Fla., March 13, 1910; 2 ♂, 2 ♀.

Key Vaca, Fla., March 14, 1910; 1 ♂, 1 ♀.

Boot Key, Fla., March 14, 1910; 1 ♂, 1 ♀.

Key West, Fla., March 15, 16, 1910; 4 ♂, 1 ♀: November 21, 1911 (Englehardt); 1 ♀ [B. I.].

In this series of specimens, taken in extreme southern Florida, the wing length in many cases, notably in the individuals from the Keys, is much less than the average of those from more northern localities. The following measurements in millimeters give the average of some forty specimens we have examined; the figures in parentheses indicate the range of variation in specimens from the region given.

	Length of pronotum.	Length of tegmina.
Males from southern Florida .....	8.2 ( 7.5 to 8.7)	37.4 (34.5 to 40.5)
Males from Georgia to Pennsylvania .....	8.3 ( 8.2 to 9. )	43.8 (41.7 to 47.2)
Females from southern Florida .....	10.4 ( 9.5 to 12. )	46.9 (42.2 to 50. )
Females from Georgia to Pennsylvania .....	10.6 (10. to 10.7)	56.8 (54. to 58.5)

In other respects the southern Florida specimens are inseparable from those taken farther north, and can certainly not be considered worthy of racial distinction.

The specimens from Long Key and Key West are paler than is usual in southeastern individuals of this species, but show no approach whatever to the Cuban *Schistocerca pallens*.

At Miami this species was not uncommon in the pine woods; it was occasional on the Keys and was noticed to be plentiful on Long Key among beach vegetation on the shore.

*Schistocerca damnifica calidior* subsp. nov.

This southern or Lower Austral representative of *Schistocerca damnifica* of the Upper Austral Zone is separated from the typical form by the greater general size, the more elongate and proportionately much slenderer tegmina, longer and more filiform antennae and slenderer caudal femora. The insect is, in the new form, much more elongate than in *damnifica* sensu strictiore, and the general appearance is quite different, but in analyzing the characters we find it hard to express the differences except in a few features.

The median carina of the pronotum is, in the new form, very generally less elevated and arcuate, and more depressed when seen from the side, but this is not absolute as quite a few specimens of *S. damnifica calidior* have this carina appreciably arcuate. The width of the marginal and discoidal fields of the tegmina, taken at the distal third, is in the male of true *damnifica* (ex New Jersey) contained four and one-half to four and three-quarters times in the greatest tegminal length, in the female of the same form this proportion varies from the same as in the male to having the tegminal width contained five times in the tegminal length. The male of the new form has the same width of the tegmina contained from six to nearly seven times in the tegminal length, while the female has the width contained from five and one-half to six and one-quarter times in the length.

The caudal femora of *damnifica* s. s. have the greatest width contained from four to four and one-quarter times in the length of the same, while *S. damnifica calidior* has the width of the same contained four and one-half times in the length.

The original description of *damnifica* is clearly based on the northern form, the measurement of length (37 mm.) perfectly fitting northern female specimens, while this measurement is much surpassed in that sex of the southern form. The type locality—Tennessee—is near the range of the southern race, and specimens from that region do

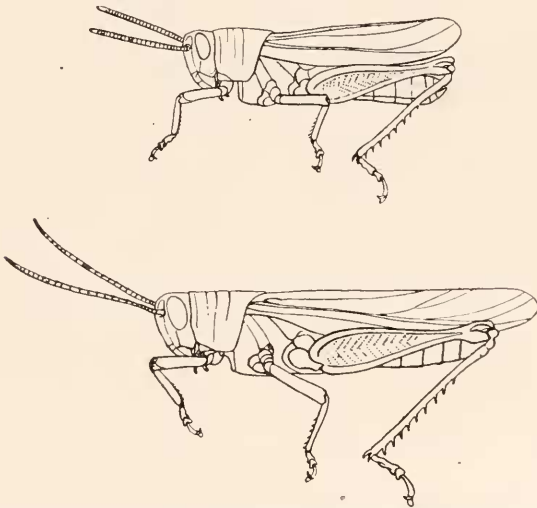


not represent the extreme condition of the northern form as found in New Jersey; however, we have Asheville, N. C., specimens which would doubtless agree with Saussure's original material, and these are decidedly the northern form.

We find that none of the synonyms of *damnifica* were based on the southern race, and in consequence a new name is necessary to designate this distinctly differentiated form. Scudder used the previously unpublished *Acridium appendiculatum* Uhler MSS. for specimens of the form here described, but as it was unaccompanied by a description that name must date from Provancher, who referred a specimen said to be from Canada to it. Scudder examined this individual and assigned it to *damnifica*.

Type: ♂; Homestead, Dade County, Fla., undergrowth in pine woods, March 17-19, 1910. (Hebard.) [Hebard Collection.]

Size medium (for the genus). Form subcompressed, slender; surface of greater portion of the body impressed ruguloso-punctate.



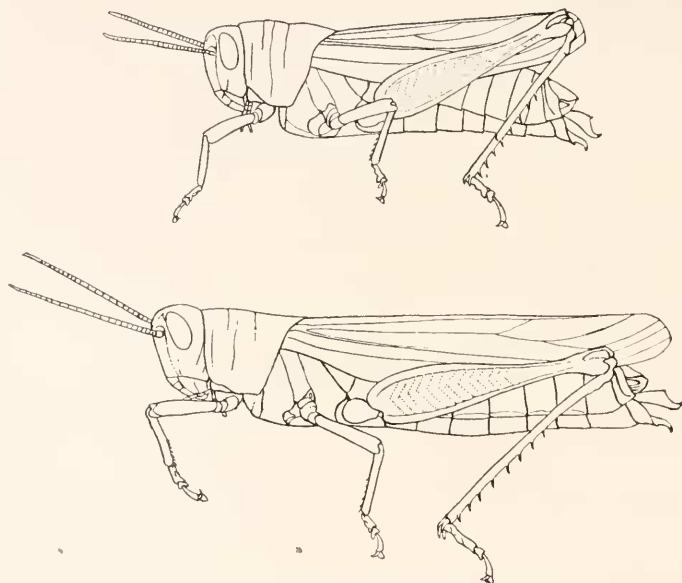
Figs. 13 and 14.—Lateral outlines of males of *Schistocerca damnifica* (13; Stafford's Forge, N. J.) and *S. damnifica calidior* (14; TYPE). ( $\times 1\frac{1}{2}$ .)

Head with the frontal costa subequal in width, not expanded between the antennal bases, non-sulcate; eyes ovate, less elongate than in true *damnifica*; antennæ very slightly shorter than twice the greatest dorsal length of the pronotum, subfiliform. Pronotum with the median carina not at all elevato-arcuate, nearly straight when seen from the side; caudal angle of the disk subrectangulate. Tegmina

moderately elongate, surpassing the tips of the caudal femora by two-thirds of the dorsal pronotal length, the width of the distal third contained about six and one-half times in the greatest length of the same; apical portion moderately narrowed by the areuation of the costal margin, the immediate apex obliquely rotundato-truncate. Caudal femora moderately robust but with the distal third slender, the greatest width contained four and one-half times in the length of the same.

Allotypic female. Miami, Dade County, Fla., undergrowth in pine woods, March 27, 1910. (Hebard.) [Hebard Collection.]

Agrees with male except in the following characters. Size considerably greater than in male. Antennæ nearly one and one-half times the dorsal length of the pronotum. Caudal angle of the pronotal disk rounded obtuse-angulate. Tegmina in form similar



Figs. 15 and 16.—Lateral outlines of females of *Schistocerca damnifica* (15; Stafford's Forge, N. J.) and *S. damnifica calidior* (16; allotype). ( $\times 1\frac{1}{2}$ .)

to those of the male, surpassing the tips of the caudal femora by one-half of the dorsal pronotal length, the width at the distal third contained slightly more than six times in the length. Caudal femora with the greatest width contained four and two-third times in the length of the same.

General color walnut-brown, passing ventrad into russet and tawny-olive, the narrow but moderately defined median line on the head and pronotum russet, while the anal area of the tegmina is wood-brown, margined laterad by the burnt-umber wash of the remainder of the tegmina. Antennæ passing from cinnamon-rufous at the base to hazel at the tips; eyes russet.

*Measurements (in millimeters).*

	<i>S. damnifica</i> . <sup>23</sup>		<i>S. damnifica calidior</i> .	
	♂.	♀.	♂ Type.	♀ Allotype.
Length of body.....	23.8	34.	29.	46.5
Length of pronotum.....	6.	8.5	7.2	9.5
Length of tegmen.....	17.5	23.2	25.8	34.
Length of caudal femur.....	13.2	18.	21.5	22.2

In addition to the type and allotypic female we have before us the following specimens which may be considered paratyptic:

Miami, Fla., March 27, 28, 1910; 7 ♂, 2 ♀: November 16, 1911 (Englehardt); 2 ♀ [B. I.].

Homestead, Fla., March 17-19, 1910; 7 ♂.

The male individuals are fairly uniform in coloration, some few specimens having the general tone deeper and more umber, while others have the discoidal field of the tegmina distinctly cryptomaculate. The additional Miami females, however, have the general colors more clay color and bistre, with the pronotum strongly marked with the latter and the discoidal and marginal fields of the tegmina strongly maculate with the same, the caudal tibiæ also being quite purplish. These specimens greatly resemble brownish individuals of *S. alutacea*.

In studying this form we have had before us a series of over one hundred and forty specimens of the two forms from south of Virginia, a sufficient series to enable us to map with considerable accuracy the limits of the range of both forms.

True *damnifica* probably ranges over the entire Upper Austral Zone, extending southward over the Appalachian system as far as Gainesville and Atlanta, Ga., and eastward over the lower country to Raleigh, N. C. The specimens from Raleigh and Atlanta show a slight approach to *S. damnifica calidior*, but in general form they are much closer to the northern type. The new form is typical north-

<sup>23</sup> The specimens whose measurements are here given are from Stafford's Forge, N. J., and have been used for comparison with the new form as well as having been figured above.

ward as far as Yemassee, S. C., and Thomasville, Ga. Specimens from the region about Florence, S. C., Wilmington and Fayetteville, N. C., show decided tendencies toward the northern form, although they are in general more representative of *calidior*. The area of intergradation is between the Blue Ridge and the low coastal plain region, probably being approximately marked by the fall line.

*S. damnifica calidior* was occasional in the low undergrowth of the pine woods at Homestead and Miami, at the latter locality it was plentiful at one place where the undergrowth was more than waist high on the edge of a hammock. The males are active and fly with quite the vigor of *S. alutacea*.

Arranging our material from the Southeastern States according to the above distribution, we have the localities grouped as follows:

*Schistocerca damnifica* (Sauss.).

North Carolina; Asheville,<sup>24</sup> Raleigh.<sup>24</sup>  
Georgia; Gainesville, Atlanta.<sup>25</sup>

*Schistocerca damnifica calidior* subsp. nov.

North Carolina; Fayetteville, Wilmington, Winter Park.  
South Carolina; Florence, Yemassee.  
Georgia; Tybee Island, Isle of Hope, Sandfly, St. Simon's Island, Cumberland Island, Brunswick,<sup>25</sup> Waynesville,<sup>25</sup> Jesup, Okefenokee Swamp, Albany,<sup>25</sup> Thomasville.<sup>26</sup>  
Florida; Live Oak, Jacksonville, San Pablo,<sup>27</sup> Pablo Beach,<sup>27</sup> Gainesville,<sup>27</sup> Melbourne, Miami, Homestead, Chokoloskee.<sup>28</sup>

*Melanoplus puer* Sc.

Miami, Fla., March 20-28, 1910; 19 ♂, 8 ♀, 2 n: November 16, 1911 (Englehardt); 2 ♂, 1 ♀ [B. I.].

Homestead, Fla., March 17-19, 1910; 14 ♂, 8 ♀, 3 n.

The series before us shows a marked increase in size over the specimens of the type series from Fort Reed, Fla.<sup>29</sup> The males range in length from 13.5 to 17 mm., while the females are from 19 to 22.5 mm.; the majority of the adults measuring nearest the maximum. The insects here recorded are also all proportionately heavier than the types, with strongly developed caudal femora. We find, therefore, that the species materially increases in size in its southward range and that it cannot be ranked among the

<sup>24</sup> These *Proceedings*, p. 632, 1910.

<sup>25</sup> *Ibid.*, 1910, p. 594.

<sup>26</sup> *Ibid.*, 1904, p. 789.

<sup>27</sup> *Ibid.*, 1907, p. 292.

<sup>28</sup> *Ibid.*, 1905, p. 40.

<sup>29</sup> *Proc. Bost. Soc. Nat. Hist.*, Vol. XIX, p. 87, 1877.

smaller species of the genus. The caudal margin of the disk of the pronotum is very broadly V-shaped emarginate mesad, both in the specimens here recorded and in the type series. The males show a considerable amount of variation both in length and shape of the cerci. The majority, however, agree with Scudder's description, but one specimen has the cerci acutely styliform beyond the thickened base and a number of individuals show a tendency to have the tip subspatulate. The figures given by Scudder<sup>30</sup> of the extremity of the male abdomen of this species are extremely poor.



Figs. 17 and 18.—Lateral and dorsal views of the apex of abdomen of male *Melanoplus puer* from Miami, Fla. ( $\times 6$ .)

Scudder's color description is based on dried alcoholic specimens, as the typical series are all in that condition, and we have consequently deemed it advisable to give the following color notes.

In the series before us the general color in the males varies from russet to drab tinged with raw umber and in the females from burnt umber to clove-brown tinged with vandyke brown. In the males the customary spot on the lateral lobes of the pronotum is very pronounced, piceous, triangular in shape and covers about half the lateral surface of the lobes; the females are not so noticeable in this respect since they are, as a rule, darker in general coloration and have this spot smaller and less intense. In all of the males the sides of the first four abdominal segments are piceous, which color consequently extends considerably beyond the tips of the tegmina; this marking is, in the females, suggested in only a few specimens. The hind femora in both sexes are usually heavily twice banded, with the apex also blackish, the darkest specimens alone having these bands faintly indicated. The ventral face of the caudal femora is gamboge-yellow, sometimes changing caudad to deep chrome in the males, and saturn red usually shading to flame scarlet on the outer edge in the females. In both sexes the caudal tibiae are without exception deep heliotrope-purple.

The species is local in distribution and is usually found in small colonies in the undergrowth of the pine woods; it was scarce at

<sup>30</sup> *Proc. U. S. N. M.*, Vol. XX, pl. XVII, fig. 2, 1897.

Homestead, but locally common at Miami. The saltatorial ability of this insect is surprising, but it is easily taken owing to the fact that its movements are seldom hasty.

*Paroxya atlantica* Sc.

Miami, Fla., March 20-28, 1910; 16 ♂, <sup>31</sup> 8 ♀, 1 n (nymphs were exceedingly abundant): November 16, 1911 (Englehardt); 2 ♀ [B. I.].

Homestead, Fla., March 17-19, 1910; 4 ♂, 6 ♀, 1 n (nymphs were exceedingly abundant).

We have examined the entire series previously recorded from southern Florida by us as well as the material now being studied and find that, when compared with specimens of the type series from Georgia,<sup>32</sup> the individuals from Miami, Cape Florida on Key Biscayne and Homestead are considerably smaller, more attenuate, with proportionately longer tegmina and wings and usually lighter coloration. There are no characters to be found in the series, however, which would warrant its being considered a racial form. The specimens before us from Thomasville, Ga., agree in every respect with typical specimens.

*Measurements (in millimeters).*

	Typical ♂ <sup>33</sup> Sandford, Fla.	♀ Cotype, Georgia.	Average in present series.	
			♂	♀
Length of body.....	22.5	29.	18.	24.
Length of tegmen.....	17.	18.	15.	17.5
Width of tegmen.....	3.2	4.	2.6	3.5
Length of hind femur.....	13.	16.	11.5	13.5
Width of hind femur.....	3.	4.	2.8	3.2

The specimens here examined were all taken in damp spots in the pine woods.

*Paroxya atlantica paroxyoides* (Sc.).

*Melanoplus paroxyoides* of authors.

Key Largo, Fla., March 18, 1910; 4 ♂, 4 ♀, 3 n.<sup>34</sup>

Long Key, Fla., March 13, 1910; 9 ♂, 5 ♀, 1 n.<sup>34</sup>

Key Vaca, Fla., March 14, 1910; 10 ♂, 9 ♀.

<sup>31</sup> These specimens show conclusively that the species first reaches maturity at Miami in late March. All of these specimens have recently reached the adult condition, and seven have the curved white line peculiar to the nymphal state still indicated on the sides of the pronotum.

<sup>32</sup> These specimens were sent to Professor Bruner by Mr. Scudder and are now in the Hebard Collection ex Bruner.

<sup>33</sup> *Proc. U. S. N. M.*, Vol. XX, p. 382, 1897.

<sup>34</sup> These specimens in nymphal stages have the bands of the caudal femora already well marked.

Boot Key, Fla., March 14, 1910; 1 ♀.  
 Key West, Fla., January 19, 1904,<sup>35</sup> 17 ♂, 9 ♀: March 15-16,  
 1910; 9 ♂, 7 ♀: November 21, 1911 (Englehardt); 1 ♀ [B. I.].

The species *Melanoplus paroxyoides*<sup>36</sup> was described by Scudder from three males and four females taken at Key West and Tallahassee, Fla., and a male single type from Key West has been selected by the present authors.<sup>37</sup> It is hard to understand how this species could have been placed in the genus *Melanoplus* by a worker familiar with the genus *Paroxya*. The types<sup>38</sup> show that it is but a geographic race of *Paroxya atlantica*, so near typical specimens of the latter now before us that we must rely almost wholly on coloration to separate the two forms.

The series at hand from the southern Keys differs, it is true, from true *atlantica* in being, as a rule, smaller but somewhat heavier, with proportionately shorter tegmina and more robust caudal femora; moreover, the male cerci are usually longer, more attenuate and roundly spatulate at the apex, while the supra-anal plate is more subtriangulate in outline.

On the other hand, careful examination of the entire series of eighty-eight specimens from the southern Keys shows that none of these characters are sufficiently constant to be of diagnostic value and that no constant structural differences exist.

The coloration of the caudal tibiae is, however, in the majority of the specimens from the southern Keys, quite distinctive and a grayish suffusion is frequently noticeable. A large number of individuals have the lateral face of the caudal femora heavily trifasciate with very dark brown, quite a few specimens have these markings very pale, while in others the entire surface is darkly suffused; in every specimen examined, however, the inner half of the dorsal face of the caudal femora is noticeably thrice spotted with the color which, in the more heavily marked individuals,

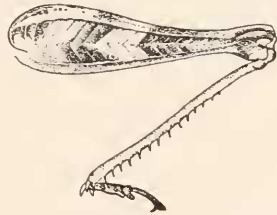


Fig. 19.—Caudal limb of male *Paroxya atlantica paroxyoides*, from Key Vaca, Fla. ( $\times 3$ .)

<sup>35</sup> These twenty-six specimens from Key West were recorded as *P. atlantica* by the present authors; these *Proceedings*, 1907, p. 298.

<sup>36</sup> *Proc. U. S. N. M.*, Vol. XX, p. 331, 1897.

<sup>37</sup> These *Proceedings*, 1912, p. 86.

<sup>38</sup> Type and two paratypic females from Key West, Fla. (Morrison), in Hebard Collection ex Bruner.

characterizes the tri-fasciate markings; these spots if present at all, are almost never so pronounced in true *atlantica*.

The series from the southern Keys are readily separable from specimens of *atlantica* from the mainland and Cape Florida on Key Biscayne, although their characters are practically intangible and exceedingly difficult to express without exaggeration.

Caudell's record of *Melanoplus paroxyoides* from Miami<sup>39</sup> belongs to *Paroxya atlantica*; the paratypes from Tallahassee, Fla., should doubtless be referred to the same form.

This geographic race is usually found fairly abundant in the low halophytic vegetation growing on the otherwise almost bare coquina rock of the Keys and also in the tangled growth along the edge of the scrub.

*Average measurements (in millimeters).*

	♂	♀
Length of body.....	20.	27.
Length of tegmina.....	14.8	17.
Width of tegmina.....	3.	3.9
Length of hind femora.....	12.	14.7
Width of hind femora.....	3.	3.9

*Aptenopedes clara* Rehn.

Punta Gorda, Fla., November 11, 1911 (Davis); 1 ♀ [U. S. N. M.].  
 Palm Beach, Fla., January 24 (Dyar); 1 ♀ : 1 ♀ [U. S. N. M.].  
 Miami, Fla., March 27, 28, 1910; 3 ♂, 5 ♀, 3 n: November 16, 1911 (Englehardt); 1 ♀ [B. I.].

Homestead, Fla., March 17-19, 1910; 5 ♂, 3 ♀.

Long Key, Fla., March 13, 1910; 2 ♂, 1 n.

Key Vaca, Fla., March 14, 1910; 4 ♂.

Boot Key, Fla., March 14, 1910; 3 ♂, 1 ♀.

Key West, Fla., March 15, 16, 1910; 4 ♂, 2 ♀ : November 16, 1911 (Englehardt); 1 ♀ [B. I.].

This series shows that while there is considerable variation in size, both geographic and individual, in the present species, the characters originally given hold true in the series of seventy specimens now available for study. As previously pointed out by us,<sup>40</sup> male specimens from Tampa are not quite typical in the form of the cerci, these being less elongate and not as decidedly falcate as in individuals from southern Florida, but in all other characters they are fully representative of *clara*. It is possible that this species is a geographic race of *sphenarioides*, but we have no positive evidence of this or even of approach to that form except in the shortening of the distal portion of the cerci in the Tampa specimens.

<sup>39</sup> *Ent. News*, Vol. XVI, p. 218, 1905.

<sup>40</sup> These *Proceedings*, 1905, p. 41.



The males of the two species may be separated by the following characters:

<i>A. sphenarioides.</i>	<i>A. clara.</i>
Antennæ shorter.	Antennæ longer.
Furcula narrow, digitiform, tips variable in production.	Furcula broad depressed lobes, hardly produced.
Supra-anal plate narrow, lateral margins in large part straight and subparallel.	Supra-anal plate broad, lateral margins arcuate, not subparallel.
Cerci short, simple, styliform.	Cerci elongate, acute falcate distad.

The form of the cerci of the males varies somewhat in the present series, although in all cases the general outline remains the same. The variation lies entirely in the width of the cercus, the degree of falcation of the distal portion and the presence or absence of a very broad, blunt angulation at the distal third of the dorsal margin. The Cape Florida specimens previously recorded and measured by us,<sup>41</sup> in the male sex surpass in size any individuals of that sex in the present series, although in the female they are equalled by Miami, Homestead, Boot Key, and Key West representatives.

The range of this beautiful species is now known to extend north to Tampa, south on the mainland at least as far as Homestead and over the Keys to Key West. We have no knowledge of the limit of its range along the east coast of Florida. Scudder's records of *Aptenopedes sphenarioides* from Key West and Biscayne Bay<sup>42</sup> are erroneous references of female individuals of this form<sup>43</sup> to the more northern species.

On the Keys this species was found in very scant numbers, usually on the edge of the scrub where the low undergrowth was unusually heavy, while on the mainland the specimens were taken in low spots in the pine woods and once or twice were beaten from the marsh grasses growing on arms of the everglades.

***Aptenopedes aptera* Sc.**

Miami, Fla., March 20-28, 1910; 2 ♂, 2 ♀.  
Homestead, Fla., March 17-19, 1910; 1 ♂.

<sup>41</sup> *Ibid.*, p. 41.

<sup>42</sup> *Proc. U. S. N. M.*, Vol. XX, p. 400, 1897.

<sup>43</sup> We have before us, ex Cln. Bruner, a Biscayne Bay female examined by Scudder and labelled *sphenarioides* by him when studying the genus for his *Melanopli* revision. This specimen is of course *clara*. Doubtless he would have separated the species if he had had the more easily recognized male.

The specimens here recorded were captured in the low undergrowth of the pine woods, all of the individuals seen being taken.

**TETTIGONIIDÆ.**

*Stilpnochlora marginella* (Serv.).

Lake Worth, Fla., June 24, 1889; eggs [U. S. N. M.].

Key West, Fla., March 16, 1910; 1 ♀ : April 24, 1881 (Schwarz); 1 adult [U. S. N. M.].

The collection of the Academy contains a male specimen labelled "Fla." This individual has been compared with material from Cuba, Mexico, Nicaragua, Costa Rica, and Cayenne. The only previous records of this species from within the United States were those from the Tortugas by Scudder<sup>44</sup> from Chokoloskee, Fla., by the authors<sup>45</sup> and from Florida by Caudell.<sup>46</sup>

The specimen taken by the junior author was beaten from a high bush, *Ilex cassine*, some ten feet from the ground, and when opened for stuffing was found to contain one hundred and twenty-four fully developed and fourteen partially developed eggs. The specimen is somewhat battered, and it is probable that very few specimens of the species survive the winter in this region.

*Scudderia texensis* Sauss. and Pietet.

Miami, Fla., March 28, 1910; 2 ♂ : November 16, 1911 (Engelhardt); 1 ♀ [B. I.].

The collection of the Academy contains a male taken at the same locality on January 20, 1899, by S. N. and M. C. Rhoads.

*Microcentrum rhombifolium* (Sauss.).

Miami, Fla., March 27, 1910; 1 ♂.

This specimen was taken on a hedge at night, where at intervals it was giving its loud stridulation, which sound most resembles a harsh "tszickk!"

*Conocephalus gracillimus* (Sc.).

*Xiphidium gracillimum* of authors.

Miami, Fla., March 28, 1910; 1 ♂, 3 n. (nymphs were exceedingly abundant.)

Homestead, Fla., March 17-19, 1910; 7 ♂, 3 ♀, 2 n. (nymphs were exceedingly abundant.)

Key Vaca, Fla., March 14, 1910; 1 n.

Boot Key, Fla., March 14, 1910; 1 n.

Key West, Fla., March 15, 1910; 1 n.

<sup>44</sup> *Bost. Jn. Nat. Hist.*, Vol. VII, p. 447, 1862. (As the synonymous *Microcentrum thoracicum*.)

<sup>45</sup> These *Proceedings*, 1905, p. 42.

<sup>46</sup> *Can. Ent.*, XXXIX, p. 287, 1907.

These specimens show but little variation in size and almost none at all in coloration. The nymphs are easily recognized by the striking dark median bar and the very narrow fastigium. The present records carry the known range of the species out over the Keys, while it has been recorded from as far north as Tampa.

Both at Miami and Homestead the high grass on the everglades was swarming with nymphs of this species in all stages of development, but the few adults were secured only after strenuous and long-continued beating, and all proved to have reached maturity very recently. In this region the great majority of the individuals of this species probably reach maturity during the first part of April.

*Atlanticus glaber* n. sp.

This fine species differs from its nearest relative, *Atlanticus gibbosus*, in having a proportionately longer pronotum with the disk transversely more convex and subequal in width throughout, the caudal margin much narrower and more sharply rounded. The lateral carinæ of the pronotum differ in being parallel and of equal intensity throughout, while the median carina is faintly indicated throughout and more pronounced on the metazona. The caudal margins of the lateral lobes of the pronotum are much less sinuate. The abdomen above is much more distinctly tricarinate and the posterior femora are shorter and much less swollen on the basal half than in any other species of the genus. The cerci of the male are not at all like those of *A. gibbosus*, they somewhat resemble those of *A. pachymerus*, but are much stouter.

Type; ♂: Miami, Dade County, Fla., on narrow arm of the everglades sparsely overgrown with knee-high marsh grasses, March 28, 1910. (Hebard.) [Hebard Collection.]

Size not as large as *A. gibbosus*. Body slender and compressed for the genus. Head moderately large; fastigium broad, rounded, broader than first antennal

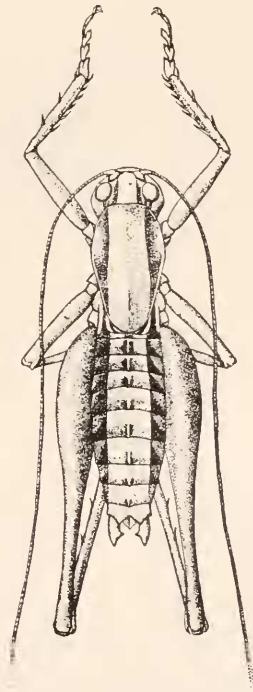


Fig. 20.—*Atlanticus glaber* n. sp. Dorsal view of type. ( $\times 1\frac{1}{2}$ .)

segment, not as broad proportionally as in *A. gibbosus*; eyes moderate, not prominent; antennæ long and slender, basally enlarged. Pronotum large, elongate, much more so than in any other of the three previously known species of the genus, produced caudad over the base of the tegmina, only the costal portion of the distal margin of the tegmina being visible from above; disk of the pronotum long, narrow, and convex, without transverse sulci, subequal in width, the cephalic margin subtruncate, the caudal margin strongly rotundato-arcuate. Tegmina extending to caudal margin of pronotal disk, the costal portion of the distal margin visible from above. Abdomen not so heavy as in *A. gibbosus*, distinctly tricarinate above. Cerci of the male short, heavy, subdepressed proximad, becoming strongly so distad, proximal portion subequal in width, distal section bluntly acute-angulate when seen from above; internal tooth placed slightly distad of the middle, short, sharp, slightly recurved. Spination as in *A. gibbosus* except in the case of the external margin of the posterior femora which are unarmed in the present species.

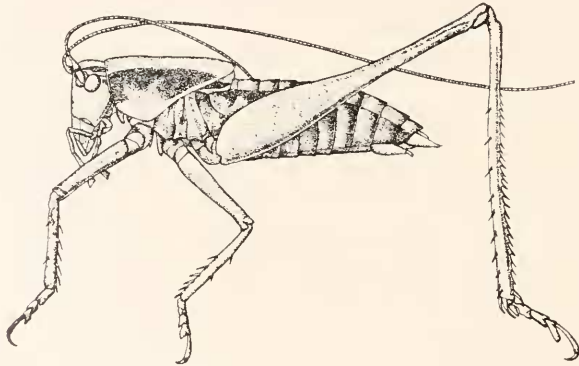


Fig. 21.—*Atlanticus glaber* n. sp. Lateral view of type. ( $\times 1\frac{1}{2}$ .)

Allotypic ♀. Taken in the low undergrowth of the pine woods; other data the same as the type.

Very little larger than the male, tegmina wholly concealed, caudal limbs of the same general proportions, but slightly more elongate. Ovipositor over one-quarter shorter than the caudal femora, as heavy as in *A. gibbosus*, straight.

General color broccoli-brown, face and antennæ very light, broken blackish markings extend caudad from caudal margins of the antennal

scrobes and the adjacent portions of the eyes. The lateral lobes of the pronotum have the general pattern of coloration found in *Atlanticus* very pronounced, being shining black, bordered on the ventral margin with ivory-white, this border being wide cephalad, but narrowing sharply caudad; the entire cephalic portion of the lobes suffused with olive-gray. The sides of the abdomen are marked on the first seven segments with triangular shining black maculations, these are large cephalad, but rapidly decrease in size ventrad and terminate dorsad at the lateral carinæ and ventrad at the margin of the abdominal segment. The median carina of the abdomen is flecked with the same color, noticeably cephalad and gradually disappearing caudad until absent on the ninth abdominal segment. In coloration the female is very like the male except that the dorsal portion of the head, pronotum and abdomen is faintly streaked with bistre.



Fig. 22.—*Atlanticus glaber* n. sp. Outline of male cercus. ( $\times 6$ .)

*Measurements (in millimeters).*

	Type.	Allotypic.
Length of body .....	31.5	32.5
Length of pronotum .....	11.5	11.8
Width of pronotum .....	4.1	4.1
Length of caudal femur .....	25.8	28.
Greatest width of caudal femur .....	4.4	4.9
Least width of caudal femur .....	1.5	1.5
Length of ovipositor .....		20.

In addition to the type and allotype we have the following specimens before us which may be considered paratype:

Homestead, Fla., March 19, 1910; one nymph probably in the next to last nymphal stage.

Miami, Fla., March 28, 1910; one nymph in the same stage.

The specimens in the one-fourth grown condition taken at Miami, February 6-9, 1904, and the still more immature individual taken there on January 17, 1904, and recorded by the present authors as *Atlanticus* sp.,<sup>47</sup> are nymphs of the species here described.

All of the specimens of this species, with the exception of the male type, were taken in the low undergrowth of the pine woods, and there is every reason to believe that this environment is the favorite habitat of the species; the male type was captured while crossing

<sup>47</sup> These *Proceedings*, 1905, p. 48.

the previously mentioned narrow arm of the everglades from the fringing pine woods on one side to those on the opposite margin.

#### GRYLLIDÆ.

##### *Scapteriscus abbreviatus* Sc.

Key West, Fla., March 16, 1910; 2 ♀.

One of these specimens has the base color paler and more buffy than the other.

Both specimens were taken on the strand in burrows in the damp sand, exposed by overturning large coquina boulders lying among the growth of the plant *Borrchia fontescens*.

In addition to these specimens, we have examined the following in the United States National Museum:

Port Tampa, Fla., February 7, 1899 (Brenan); 3 ♂.

Miami, Fla., April 8, 1904 (J. A. McCrony); 2 ♀, 1 n.

Key West, Fla., May 23, 1911 (J. V. Harris); 1 ♂, 1 ♀.

White Oak, Ga., (A. S. Barnwell); 1 ♂, 1 ♀, 1 n.

The only previous record of the species from within the United States was Scudder's "Southern Florida" reference in his catalogue.

##### *Ellipes minuta* (Sc.).

Miami, Fla., March 27, 28, 1910; 1 ♂, 4 ♀, 5 n.

Homestead, Fla., March 18, 1910; 1 n.

The specimens from Miami were all taken in wet depressions in the pine woods, while the specimen from Homestead was captured in a pot-hole in the pine woods where a strawberry bed was situated.

##### *Cryptoptilum antillarum* (Redt.).

Miami, Fla. (Biscayne Bay), February 9, 1904; 1 ♂: (Slosson), 1 ♂, [Mus. Comp. Zool. Cambr.].

Key Largo, Fla., March 18, 1910; 1 ♀ n.

Long Key, Fla., March 13, 1910; 7 ♂, 5 ♀, 2 ♂ n., 2 ♀ n.

Key Vaca, Fla., March 14, 1910; 3 ♂, 3 ♀ n., 1 ♀ n.

Boot Key, Fla., March 14, 1910; 1 ♂.

Key West, Fla., January 19, 1904; 1 ♂, 2 ♀, 4 ♀ n.: March 15, 16, 1910; 9 ♂, 13 ♀, 3 ♂ n., 4 ♀ n.

This species and the specimens here listed have been recently treated in full by the authors.<sup>48</sup>

##### *Cryptoptilum trigonipalpus* R. and H.

Key Largo, Fla., March 18, 1910; 1 ♀, 3 ♂ n.

This recently described scarce species has been fully treated and field notes on the specimens here listed have been given by us.<sup>49</sup>

<sup>48</sup> These *Proceedings*, 1912.

<sup>49</sup> These *Proceedings*, 1912.

**Cycloptilum zebra** (R. and H.).

Lake Worth, Fla., (Slosson); 1 ♂.

Miami, Fla., February 6, 1904; 1 ♂.

Long Key, Fla., March 13, 1910; 1 ♀.

Key West, Fla., March 15, 16, 1910; 4 ♂, 7 ♀, 3 n.

The authors have treated this species fully and have already discussed the specimens listed here.<sup>50</sup>

**Nemobius fasciatus socius** (Sc.).

Miami, Fla., March 28, 1910; 1 ♂.

**Nemobius ambitiosus** Sc.

Miami, Fla., March 20, 28, 1910; 2 ♂, 1 ♀, 5 n.

Homestead, Fla., March 17-19, 1910; 2 ♂, 2 ♀.

The entire series was taken in the undergrowth of the pine woods.

**Nemobius cubensis** Sauss.

Homestead, Fla., March 17-19, 1910; (macropterous) 3 ♂, 3 ♀; (brachypterous) 4 ♂, 12 ♀; 1 n.

These specimens agree with the authors' conception of the species. Saussure's description, although not fully adequate, is much more satisfactory than many later descriptions of species of *Nemobius*. The preponderance of brachypterous individuals in the present series is probably due to the fact that these specimens were taken in their natural environment and not attracted to light; in the latter case individuals of this genus are almost always found to be macropterous. Though the presence or absence of wings gives individuals of this species a very different general appearance, close examination fails to show the least difference in any other respect.

All of the specimens here treated were taken in the high grass growing on the everglades.

**Nemobius carolinus** Sc.

Homestead, Fla., March 17-19, 1910; 1 ♀.

The single specimen referred to this species was taken with the series of *N. cubensis*; it is brachypterous and exactly agrees in size and coloration with specimens of that form of *N. cubensis*, though easily separated by all the more important though less conspicuous characters.

**Miogryllus saussurei** (Sc.).

Homestead, Fla., March 17-19, 1910; 1 ♂, 1 ♀, 2 ♂ n., 1 ♀ n.

Key West, Fla., March 15, 1910; 1 ♀ n.

The individuals from Homestead were found under rubbish about

<sup>50</sup> These *Proceedings*, 1912.

a strawberry bed situated in a "pot-hole" in the pine woods, the specimens from Key West were taken from under coquina boulders and boards.

*Gryllus firmus* Sc.

Miami, Fla., March 27, 28, 1910; 5 ♂ n., 1 ♀ n.: November 15, 1911 (Englehardt); 1 ♀ n. [B. I.]

Homestead, Fla., March 17-19, 1910; 1 ♀ n.

Long Key, Fla., March 13, 1910; 1 ♂ n.

Key West, Fla., March 15, 16, 1910; 2 ♂, 3 ♀, 4 ♀ n.

The adults in this series are very small for the present species averaging 21.4 mm. (20 to 24 mm.) in length. The majority of the specimens taken at Key West were found in or near their holes situated in the short heavy grasses growing on the scant soil near depressions.

*Gryllus rubens* Sc.

Miami, Fla., March 27, 28, 1910; 2 ♂.

Homestead, Fla., March 17-19, 1910; 2 ♀ n.

The adults from Miami were captured in low grass growing in the grounds of the Royal Palm Hotel.

*Gryllodes sigillatus* (Walk.).

Miami, Fla., March 27, 28, 1910; 1 ♂, 1 ♀.

Long Key, Fla., March 13, 17, 1910; 2 ♂, 1 ♀ n.

Key Vaca, Fla., March 14, 1910; 2 ♀.

The entire series here recorded was captured in cracks and crevices about buildings. The species flourishes in or near human habitations, and, although probably brought to southern Florida in goods from the West Indies, it is now thoroughly established there. At Key Vaca a large colony was found between boards piled for building near the railroad station; so active were the insects and so numerous were the nymphs that in the collector's efforts to capture adults all but two females escaped.

*Anaxipha pulicaria* (Burmeister).

Key West, Fla., March 15, 1910; 1 ♀.

We are using the above name provisionally for this species, following Saussure in so doing, although we are not convinced that *Gryllus pulicarius*<sup>51</sup> Burmeister, from Jamaica, based on a twelve-word diagnosis, is the same as the present individual. There can be little doubt, however, that the insect described by Saussure<sup>52</sup> under Burmeister's name is the same as the present specimen.

<sup>51</sup> *Handb. der Entom.*, II, Abth. II, pt. 1, p. 732, 1838.

<sup>52</sup> *Miss. Sci. Mex., Rech. Zool., Orth.*, p. 371, pl. 7, fig. 1, 1874.



The specimen before us was taken in short, heavy grasses growing on the scant soil near a depression, where long-continued search failed to reveal other individuals.

*Cyrtoxipha gundlachi*<sup>53</sup> Sauss.

Miami, Fla., March 20, 28, 1910; 2 ♂, 3 ♀, 1 n.

Key Largo, Fla., March 18, 1910; 1 ♂, 3 n.

Long Key, Fla., March 13, 1910; 1 ♀.

Key Vaca, Fla., March 14, 1910; 1 ♂, 2 ♀.

Key West, Fla., March 15, 16, 1910; 26 ♂, 18 ♀: April 6, 1903 (Schwarz); 1 ♀ [U. S. N. M.].

This species varies appreciably in size in both sexes, while the extent to which the caudal portion of the wings extends caudad of the tegmina varies from one-half to four-fifths of the length of the caudal femora. In all of the adults in the above extensive series the tympanum of the cephalic face of the cephalic tibiae is distinctly indicated.

A single male from Punta Gorda, De Soto County, Fla., taken November 17, 1911, by W. T. Davis on mangrove (B. I.), is also before us. It is slightly smaller than the smallest of the present series, but otherwise shows no differences.

The series taken at Miami was captured by beating heavy foliage in "jungle growth"; on the Keys the species was found not uncommon on a great variety of bushes, vines and trees, many were beaten from *Ilex cassine*, while numbers were heard and some few taken from the foliage of the mangroves.

The sound produced by the males of this species is very delicate and high-pitched—a clear, tinkling note which is very pleasing.

*Hapithus quadratus* Sc.

Miami, Fla., March 28, 1910; 1 n: November 15, 1911 (Engelhardt); 1 n. [B. I.]

Long Key, Fla., March 13, 1910; 1 ♂.

Key West, Fla., March 15, 16, 1910; 3 ♂, 2 ♀.

The adult specimens were all captured by beating low bushes, such as *Ilex cassine*, and high plants, while the nymph taken at Miami was found in the undergrowth of the pine woods.

---

<sup>53</sup> The record by the authors of *C. delicatula* Scudder, from Key West and Miami (these *Proceedings*, 1905, p. 51), is an erroneous identification of the present species. Since that date we have been able to examine the typical material of *C. delicatula* and ascertain its true relationship to the specimens in hand.

**Orocharis saulcyi** (Guérin).

Miami, Fla., March 28, 1910; 1 n.

Homestead, Fla., March 17-19, 1910; 2 n.

Key Largo, Fla., March 18, 1910; 1 ♂, 1 ♀, 3 n.

The adults were taken on Key Largo in the twilight of the heavy jungle growth, by vigorously beating the foliage of the lower limbs of the trees and the tangled grape and other vines.

During the winter months this species is one of the scarcest to be found in southern Florida, constant search for it during several winter collecting trips has resulted in the capture of but four adults.

**Tafalisca lurida** Walk.

Capron, Fla., April 7, 21; 2 ♀, 2 n. [U. S. N. M.]

Haulover, Fla.; 1 n. [U. S. N. M.]

Key Largo, Fla., March 18, 1910; 1 n.

Key West, Fla.; 1 n. [U. S. N. M.]

The nymph from Key Largo was taken in the same manner and situation as the specimens of *Orocharis saulcyi* from that locality.